



# **Curriculum Review – Public Report**

**Department of Electrical and  
Computer Engineering**

**Schulich School of Engineering**

**<http://schulich.ucalgary.ca/>**

**May, 2017**

## 1. Context:

The Department of Electrical and Computer Engineering (ECE) in Schulich School of Engineering at the University of Calgary administers two major curricula: Electrical Engineering (ENEL) and Software Engineering (SENG), as well as a minor curriculum in Computer Engineering (ENCO). The Department offers two interdisciplinary specialization options: Biomedical Engineering, and Energy and Environment.

The undergraduate curriculum gives students a broad education in electrical, computer and software engineering. All first-year students take the same common-core program in mathematics, sciences, computing, communications, engineering principles, and design.

The electrical engineering program of study offers courses in electric machines, electronic devices, circuits and networks, radio communication, computers, control systems, and other key areas. A wide variety of technical elective courses, such as digital communication, microwaves, renewable power systems, allow our students to specialize at the senior level.

The software engineering program of study offer courses in computer architecture, operating systems, computer networks, databases, software analysis, design and implementation, and large scale software systems. The available technical electives include options such as virtual reality, computer graphics and web application development.

The department's degree programs are accredited by the Canadian Engineering Accreditation Board (CEAB).

After the first three years in the engineering program, students can participate in the paid 12-to 16-month Engineering internship program. It gives our students important practical engineering experience, often with an opportunity to undertake the internship in other parts of the country, and internationally.

BSc graduates can apply to become a Professional Engineer (in the Province of Alberta, administered by APEGA) after 4 years of work experience (three years if they take internship).

## 2. Guiding questions:

The Department of Electrical and Computer Engineering gathered data from different sources, such as consultations with the Industrial Advisory Board (IAB), alumni, students' feedback, a department retreat, graduate attribute data, and data from the curriculum mapping process. These were carefully reviewed and analyzed to identify some guiding questions to be addressed for improving the department's existing programs. The process is illustrated in Figure 1.

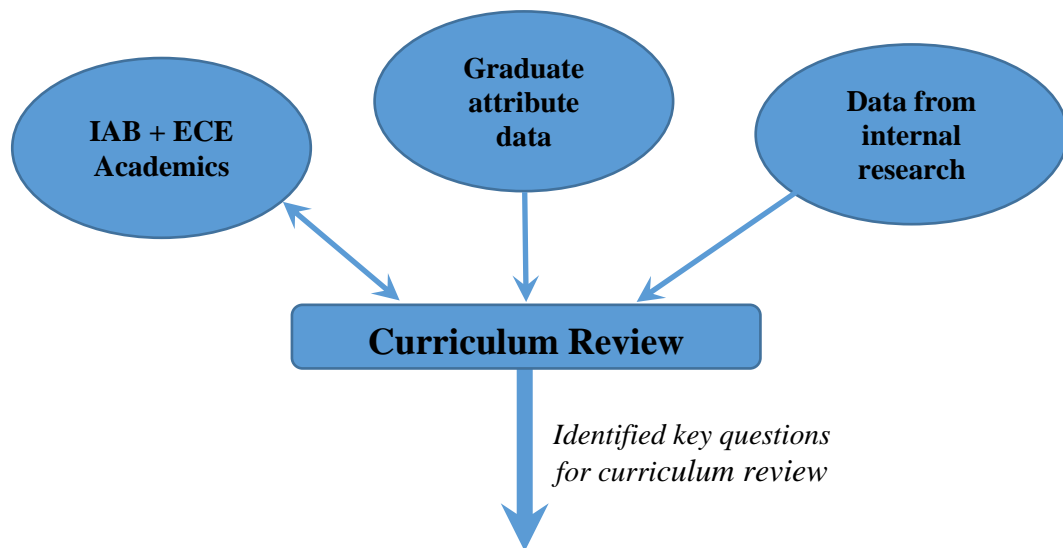


Figure 1: Curriculum review process

The guiding questions for Electrical Engineering and Software Engineering are given below.

- How might we prepare our students better for entering the real world of engineering?
- How might we improve the connections and flow between courses, and improve the opportunities for students to take courses that interest them?
- How can we provide more opportunities for students to improve their abilities to analyze and design considering the impact of engineering on society and environment?

## 3. Action Plan:

A set of action plans has been recommended for Electrical Engineering and Software Engineering as presented in Tables 1 and 2.

**Table 1. Recommended action plan for Electrical Engineering and Software Engineering (Program level)**

<b>Recommendations – Program Level</b>			
<b>Recommendation</b>	<b>Action Item</b>	<b>Timeline for Implementation</b>	<b>Lead Responsibility</b>
<b>Electrical &amp; Software</b>	Expand the ECE Industry Advisory Board. Create and maintain a database of potential industries. Create project proposal forms and solicit project from industries.	1 year	Design project course (ENEL300,400,500) instructors; report to Associate Head (UG)
	Invite and keep a record of all guest speakers from industry.	1 year	Instructors and ECE Office; report to DUSC
	Organize more industry tours, particularly for 2 <sup>nd</sup> year students.	1 year	IEEE Student Branch Counselor; report to DUSC
<b>Electrical &amp; Software</b>	Incorporate a reasonable amount of safety, codes and standards, including environmental codes, in the curriculum. Consult with the IAB	2 years	An ad-hoc committee formed by DUSC; report to DUSC
<b>Electrical &amp; Software</b>	Identify the gaps and incorporate industry standard tools/software where applicable.	2 years	An ad-hoc committee formed by DUSC; report to DUSC
<b>Software</b>	Identify, develop and offer Software Engineering technical elective courses in demand; consult with the IAB and alumni.	3 years	An ad-hoc committee formed by DUSC; report to DUSC

**Table 2. Recommended action plan for Electrical Engineering and Software Engineering (Administration)**

<b>Recommendations – Administration</b>			
<b>Recommendation</b>	<b>Action Item</b>	<b>Timeline for Implementation</b>	<b>Lead Responsibility</b>
Continue to promote and facilitate industry relations	Identify and implement a system to facilitate incorporating the real-world engineering problems, including impact on society and environment, into course content.	1 year	Department Head with the help of Associate Head (UG)
Ensure that the above recommendations are being implemented as per the recommended timeline.	The Curriculum Review Committee meets at the beginning of each semester and review the progress. Invite relevant leads for each action item indicated above. Organize semi-annual IAB meetings for further feedback.	3 years	Curriculum Review Committee (Head, Associate Head, Program Directors)